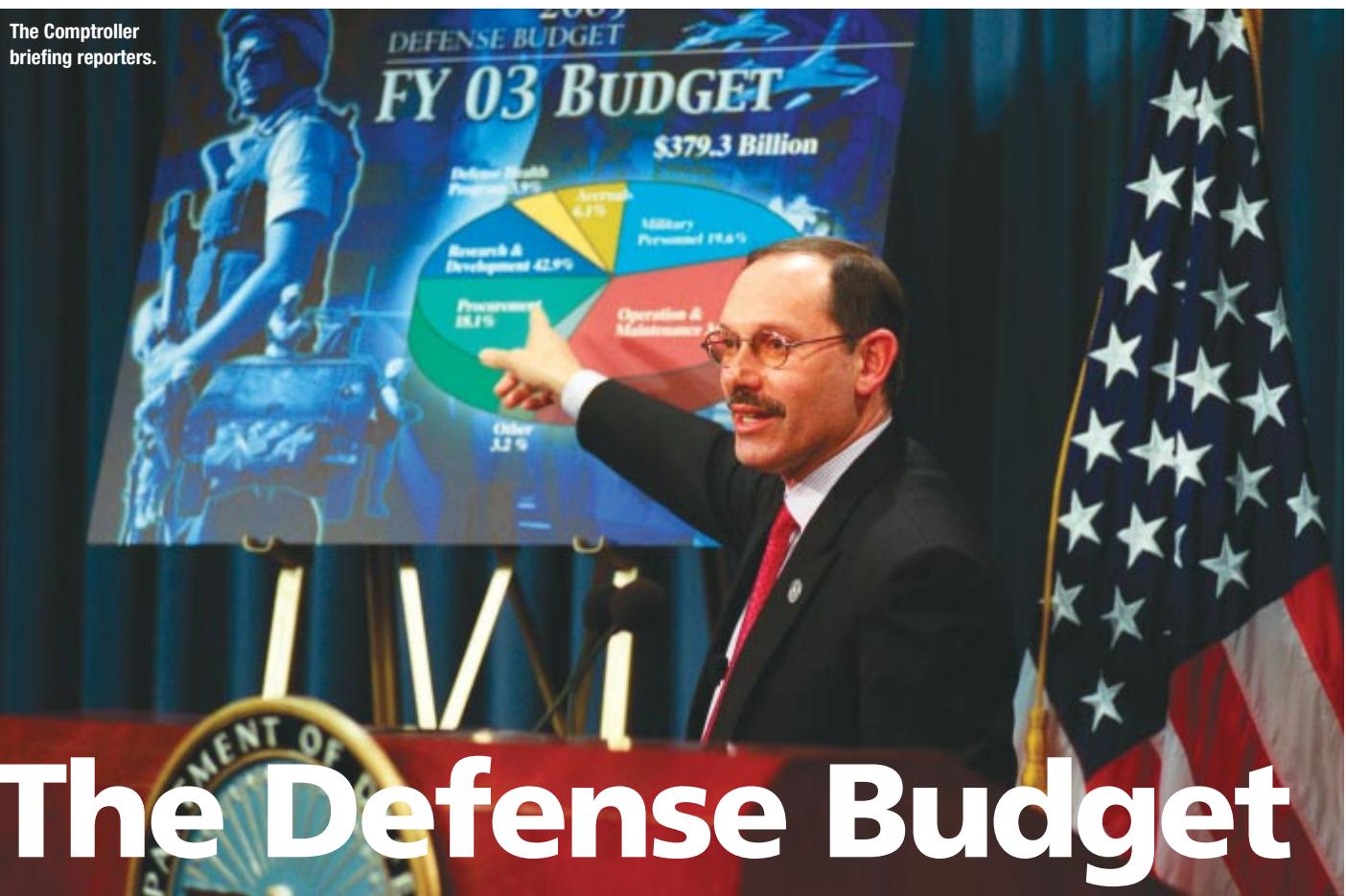


The Comptroller  
briefing reporters.



DOD (R.D. Ward)

# The Defense Budget

## Is It Transformational?

By DAVID L. NORQUIST

In the Presidential campaign of 2000, George Bush often addressed the need to transform the Armed Forces. Once elected, he gave military transformation a central role in defense strategy. The administration presented its defense budget for fiscal year 2003 after twelve months of review. Did that budget support transformation? The initial reaction is mixed.

The Center for Strategic and Budgetary Assessments, which has been vocal in advocating transformation, registered its disappointment: "[The] new defense plan appears very similar to

the defense plan this administration inherited. . . . Perhaps most questionable is the administration's decision to continue to move ahead with three new tactical fighter programs. . . . Likewise, the Crusader artillery system seems inconsistent with the goal of having an Army that is light enough to rapidly deploy."<sup>1</sup>

Some other supporters of modernization were more encouraged. The Lexington Institute was optimistic in part because it did not take the DOD budget as a break with the past: "Last year's trendy buzzword for what new management at the Pentagon would mean was 'transformation.' In the end they made the right choice, fully funding all three [tactical fighter] programs. . . . Even

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the Army's widely criticized Crusader howitzer program . . . turned out to be a major improvement necessary for the conduct of future land warfare."<sup>2</sup> But these critiques are focused on only a few programs that will neither bring about transformation nor prevent it.

### The Lost Crusader

Modernization is the process of fielding more advanced items of equipment that basically perform the same function as the matériel being replaced. Military innovation, or transformation, means profoundly changing equipment and its operational employment to create a radically new approach to warfare. The effect of implementing such change is a revolution in military affairs.

Modernization is sometimes mischaracterized as an obstacle to transformation, as happened in the case of the Pentagon announcement that the Crusader artillery program would be terminated. Press reports indicated that aborting this program was a test for transformation. It is not, because transformation can succeed with or without Crusader. The fate of Crusader is a choice between enhancing the firepower of Army heavy divisions and accelerating the transition to a future system. Transformation does not depend on this choice; it relies on designing equipment and doctrine for a future combat system.

To gauge the new defense budget, one must accept that invoking the term *transformation* as a byword—as opposed to *modernization* or *reform*—was a conscious choice. It ties administration policy to a school of thought which posits that technology has dramatically changed the world and will lead to a revolution in military affairs.

For example, in the years between World Wars I and II, innovations such as the internal combustion engine and radio, combined with advances in doctrine, produced revolutionary combat units and ways of fighting. This revolution in military affairs produced the *Blitzkrieg* tactics used by *Panzer* divisions and strikes by carrier-based aircraft that rendered vulnerable any military force that relied on trench warfare and battleships.

The shift from the industrial to the information age, which radically altered the economy of the United States, has led many analysts to expect an equally profound change in the way we fight. The Tofflers describe how moving from an agrarian (first wave) society to an industrial (second wave) society has transformed the world. They believe the shift to an information (third wave) society involves an equally exciting change: "A true revolution goes beyond [individual inventions] to change the game itself, including its rules, its equipment, the size and organization of the 'teams,' their training, doctrine, tactics, and just about everything else."<sup>3</sup> Or in other words, as

the Chairman has recently told Congress, "[Transformation] must extend beyond weapon systems and matériel to doctrine, organization, training and education, leadership, personnel, and facilities."

Transformation is a daunting task. Revolutions in military affairs are rare, and the military is traditionally poor at dramatic innovation. But it is against this ambitious goal of innovation that the defense budget should be judged.

The best way to determine the potential for future success is past experience. What have been the pitfalls? Why did some nations succeed while others failed? Has the administration taken the right fiscal, political, and organizational steps to overcome obstacles? If so, it has succeeded in laying the groundwork for transformation. If not, it is likely to learn the lessons of history.

### Obstacles to Innovation

Sir Michael Howard observed: "I am tempted indeed to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong."<sup>4</sup> His sentiment is typical of those who have studied innovation and the evolution of doctrine. A more encouraging appraisal by someone who examined many cases of innovation concludes, "Peacetime innovations are possible, but the process is long."<sup>5</sup> There are valid reasons for such pessimism.

Major innovations are uncommon. Those with vision must grasp the relevance of changes in technology or the security environment and push for innovation. Decisionmakers must sort out the value of their proposals, which may be buried with more dubious ideas. In addition, military operations are complex. It is difficult to envision the effect of change in doctrine and technology without a prototype of the innovation for experimentation. But without a vision, it is hard to make a case for resources to develop technology. The history of carriers illustrates this problem.

By the end of World War I, the British had 12 carriers in service or under construction, more than all other countries combined; but twenty years later the Royal Navy was still using them for reconnaissance, not airstrikes. A carrier could only carry 12 planes in the early 1920s. Britain believed that such a small force, while valuable as spotters to guide the fleet, would be insufficient to sink a battleship. Lack of vision contributed to poor technical progress. With only 12 aircraft, it was safer and easier to store planes below deck. But a clear deck made it less critical to develop arresting gear, catapults, and safety barriers. Absent

High speed vessel,  
Fleet Battle Experiment  
Juliett.



Integrated battlespace  
arena, Millennium  
Challenge '02.

that equipment it was impossible to increase the number of aircraft aboard by storing more planes on deck, and it prevented the fast launch and recovery procedures necessary to implement a massed airstrike without the planes running out of fuel. Moreover, for much of the interwar period British carrier planes were built and operated not by navy but the air force, which put a low

priority on naval aviation. Thus the British experience derived from fleet maneuvers using aircraft carriers with a limited number of unimpressive planes. Rather than focusing on the offensive potential of carriers, the Royal Navy was more concerned about their vulnerability.

While the United States, like Great Britain, originally used carriers as the eyes of the fleet, it was also studying their potential. The Naval War College, for instance, conducted a wargame in 1923 which assumed that carriers could deploy many more planes than was considered possible at the time. Students discovered that when the blue team used all its 200 aircraft in a single strike, it crippled all red team carriers and sank a battleship. Rear Admiral William Moffett, the first chief of the Navy Bureau of Aeronautics, described the vision: "The function of a large carrier should be the same as that of a battleship . . . to

**Loading self-propelled howitzer.**



Fort Stewart (Donald Teft)

deal destructive blows to enemy vessels. Its offensive value is too great to permit it to be ordinarily devoted to scouting.<sup>6</sup> The Navy conducted exercises in the interwar years that explored carrier-based airstrikes with mixed results. But Moffett, a former battleship commander, built support both inside and outside the service to continue work on this capability. The vision tested at Newport

became a reality as both the number of carriers and their capabilities grew. As additional carriers entered the fleet, the Navy

grouped them to increase the size of airstrikes. The final step in the innovation process occurred in 1943 when the multi-carrier task force formally became part of naval doctrine.

### **as additional carriers entered the fleet, the Navy grouped them to increase the size of airstrikes**

**Setting Goals**  
The Pentagon identified six transformational goals in presenting its budget: protecting bases of operation/homeland defense, denying enemies sanctuary, projecting power in denied areas, leveraging information technology, conducting effective information operations, and enhancing space operations. To meet these goals, the administration has initiated 13 programs and accelerated 22 existing ones, such as hypervelocity missiles, unmanned aerial and underwater vehicles,

high energy lasers, the expanded global positioning system, the Army future combat system, the Navy DD (X) family of ships, and a high-capacity secure digital communications system.

Beyond pursuing specific systems, DOD has requested large budget increases for agencies and activities that focus on developing new technologies and prototypes, for example \$432 million (19 percent) for the Defense Advanced Research Projects Agency in FY03, added to the 14 percent increase in FY02. This agency is charged with demonstrating high-risk, high-payoff research with a working prototype. The Advanced Concepts Technology Demonstration program, which would convert more mature technologies into militarily useful prototypes, should increase by \$79 million, or 65 percent, over two years.

In addition to technology, there is an increased focus on experimenting with new doctrine. Each service has wargames, battle labs, and field or fleet experiments to explore the implications of emerging technology on doctrine. To build on service programs, U.S. Joint Forces Command has an experimentation program for which another \$33 million, or 51 percent, has been requested over the 2001 level. Most importantly, the new budget provides \$20 million for a force

transformation directorate within the Office of the Secretary of Defense to assume the leading role in evaluating the transformation activities of each military department.

This approach avoids the problem that the Royal Navy experienced in the 1920s and 1930s by encouraging simultaneous development and experimentation to enable a variety of technologies, prototypes, and doctrines to contribute to transformation.

### Bureaucratic Resistance

Once there are advocates for a potential innovation, the struggle shifts to finding support within the bureaucracy. However, militaries are complex organizations and major change involves risk and uncertainty. Since the Armed Forces must respond to crises on short notice, their leaders are hesitant to make changes that sacrifice readiness. Meeting this challenge requires developing both a compelling case for change and a core group of supporters within the military.

## **over the next six years unmanned combat aerial vehicles will enter production at the same time as the joint strike fighter**

The revolution in tank warfare died a bureaucratic death in America between the wars. The U.S. Army was aware of the work of a British analyst, Captain B.H. Liddell Hart, who outlined the revolutionary potential of armored warfare. Military journals debated the possible impact of the tank. Nevertheless, the idea did not win the support of the service leadership.

The commander of the armor corps did not promote the development of independent armored divisions or the use of tanks for penetrating deep into enemy lines. Likewise, in a report released in 1919 on the lessons of World War I, the Chief of Staff, U.S. Army, concluded:

*Important as has been the effect of these mechanical developments and special services, their true value has been as auxiliaries to the Infantry. Nothing in this war has changed the fact that it is now, as always heretofore, the Infantry with rifle and bayonet that, in the final analysis, must bear the brunt of the assault and carry it on to victory.<sup>7</sup>*

The National Defense Act of 1920 eliminated the tank corps and its officers were assigned to other branches while the tanks and their development were left to the infantry. Former armor officers opposed the change but realized the cause was hopeless. As Dwight Eisenhower would recall, "In 1920 and 1921 George Patton and I publicly and earnestly expounded [ideas on armor] in the

service journals of the day. The doctrine was so revolutionary . . . that we were threatened with court-martial."<sup>8</sup>

Within the Army, this revolutionary approach to war had no champion and no career path. Bureaucratic opposition and inertia smothered hope for this peacetime innovation. But the service changed its approach when it developed the air assault division.

In the early 1950s the Army became concerned about the vulnerability of massed ground forces to nuclear, biological, or chemical attack. While helicopter technology was still immature, leaders such as General James Gavin believed that airmobility could reduce this vulnerability. He appointed General Hamilton Howze, an armor officer, the first director of aviation. Howze turned to exercises to demonstrate the potential of helicopters and to begin developing tactics and doctrine.

Taking a cue from Moffett and naval aviation, the supporters of airmobility recruited mid-career officers into aviation. Howze recalled, "In order to get some real enthusiasts, people who would associate their lives and progress in the Army with aviation, we had to go outside of the current aviation ranks. I selected many of those people myself."<sup>9</sup>

Meanwhile, technical advances caught up with the bold ideas. Helicopters were becoming more reliable and powerful. Both UH-1s and AH-1s had turbine engines. And within a few years later Vietnam provided the baptism by fire that solidified the place of the helicopter in Army force structure and warfighting doctrine.

### Limited by Legacy?

When the budget for FY03 was unveiled, a lack of terminations in major programs caused many defense analysts to conclude that the services had stopped transformation. It would be more accurate to say that the battle was deferred.

The new budget funds the key modernization efforts in addition to the more revolutionary concepts while taking organizational steps to minimize bureaucratic resistance which the new ideas will encounter when these options clash. For example, the administration has added \$1.5 billion to the Air Force over the next six years for unmanned combat aerial vehicles. This approach means that these vehicles will enter production at the same time as the joint strike fighter. Future leaders of the Air Force will be in a position to make informed decisions on the mix of these two systems in light of their demonstrated capabilities, not merely their theoretical capabilities.

The proposed Navy budget provides for the acquisition of DDG-51 destroyers but replaces the

next generation of DD-21 land attack destroyer with research and development on new ships, technology, and fighting doctrine. In addition, the Pentagon is adding a billion dollars to convert four Trident nuclear submarines to a conventional strike mission, allowing the Navy to evaluate the combat value of a submerged long-range strike capability.

The Army budget would continue to fund upgrades to the existing heavy divisions, but there is no follow-on funding to develop a future heavy division. Instead, the budget accelerates the development of the future combat system, a family of manned and unmanned vehicles and weapon systems designed from the beginning to take advantage of the information revolution. In the meantime, the budget will also fund the fielding of medium weight brigades, which combine existing equipment with new technologies and, most importantly, new organization and doctrine.

While the Pentagon recently initiated studies to scale back several modernization programs, its approach raises a basic question. Does modernizing existing equipment or maintaining a legacy force structure prevent transformation? There is little historical evidence that it does. The United States spent five times more on battleship modernization than the British before World War II, yet had more success in developing carriers. At the same time, Germany continued to focus heavily on training horse cavalry divisions even as they experimented with armored warfare. Furthermore, even after developing tanks, Germany actually expanded its army to 120 infantry divisions. These units, operating on foot and often with horse-drawn artillery, did not prevent ten *Panzer* divisions from executing *Blitzkrieg* tactics.

### **Stocking the Bureaucracy**

The struggle is about more than technology. It also involves people. When the Secretary of Defense created the Office of Force Transformation, he selected as its head Vice Admiral Arthur Cebrowski, USN (Ret.), the former commander of *USS Midway* and *USS America* battle groups. In addition to holding traditional commands, Cebrowski has a reputation for promoting innovative ship designs and warfighting concepts. And in selecting the next commander of U.S. Joint Forces Command, a position central to joint experimentation, the Secretary turned to his senior military assistant, Vice Admiral Edmund Giambastiani, USN. The decision to drive transformation is alive and well among senior leaders at the Pentagon:

*I would hazard a guess that five years from now, looking back, we'll say that the single most transformational things we did were to select those people [the*

*4-star officers in charge of the major commands]. . . They will then fashion their staffs and their key people, and they will be involved in the promotions of the people under them. And it'll affect the United States of America for the next decade and a half.<sup>10</sup>*

The military undermines innovation when it prevents experimentation and the prototyping of ideas or when it opts to continue old ways after a new system is demonstrated. The proposal under the new plan provides time, resources, and leadership to demonstrate multiple technologies and related doctrine. When prototypes are used in exercises or conflicts—like the armed Predator unmanned aerial vehicle in Afghanistan—enthusiasm spreads. Users develop hands-on expertise and provide practical feedback. As the system evolves and greater capabilities are demonstrated, it becomes possible to design a revolutionary weapon system. Military decisions on the fate of such systems will determine if transformation either succeeds or fails. This approach relies on ensuring that the right individuals are in the right positions to make those decisions.

### **Changing Requirements**

Developing a new concept of warfare is inexpensive. Developing and fielding hardware to implement the concept is not. Therefore civilian leaders insist that the Armed Forces only pursue those systems that are compatible with expected security requirements. Unfortunately innovations develop slowly while national security requirements can change quickly.

Prospects for innovation in armored warfare prior to World War II were bright in Britain. The army had used tanks in World War I. Moreover, several forward looking thinkers articulated the revolutionary potential of the tank. As Liddell Hart argued:

*[Tanks] are not an extra arm or a mere aid to infantry, but are the modern form of heavy cavalry, and their correct tactical use is clear—to be concentrated and used in as large masses as possible for decisive manoeuvre against the flanks and communications of the enemy, which have been fixed by the infantry—themselves mechanised—and artillery.<sup>11</sup>*

In August 1919, however, the War Cabinet formulated the ten year rule, stating that Britain would not be involved in a major war over the next decade and thus no expeditionary force would be needed. According to the civilian leadership, the army would focus on protecting the Empire. The tank was ill suited to tropical climes or low-intensity conflict that London expected. Even in 1937, when war seemed likely, Neville Chamberlain pursued a policy of limited liability,

X-47A experimental  
unmanned air combat  
vehicle.



Northrop Grumman Corporation

in which the country would provide air and naval forces but rely on allies to furnish large armies. With the outbreak of World War II, the political leaders once again focused on the need for a modern army to fight a major land war in Europe. However, the delay in developing the equipment and doctrine for tank divisions put England at a distinct disadvantage compared with Germany, which had more consistently exploited armored vehicles.

In World War I, Germany planned to quickly defeat France and then turn on the Russians. Although this strategy failed, its security requirements remained the same. It was a land power faced with the possibility of a two-front war. The Versailles Treaty limited the Germans to seven infantry and three cavalry divisions and prohibited it from the production of tanks, yet these obstacles did not prevent the development of *Panzer* divisions.

General Hans von Seeckt, commander of the army from the end of World War I to 1926, saw mobility as a way to offset the small size of his forces: "In a few words then, the whole future of warfare appears to me to lie in the employment of mobile armies, relatively small but of high quality and rendered distinctly more effective by the addition of aircraft."<sup>12</sup> Though the focus was on preparing horse cavalry for this mission, he recognized that "motor transport is one of the most urgent questions of military organization."<sup>13</sup>

The Germans monitored the development of the tank in Great Britain throughout the 1920s and 1930s, and their journals discussed tactical problems with armored warfare. The government arranged in 1926 for the military to use a secret tank-training center in Kazan, Russia. In 1932, the army held maneuvers in Germany using tank battalions, even though its tanks were armored plates mounted on trucks. From this developed the concepts that would lead to the *Panzer* division. As General Heinz Guderian recalled:

*My historical studies, the exercises carried out in England, and our own experiences with mock-ups had persuaded me that tanks would never be able to produce their full effect until the other weapons on whose support they must inevitably rely were brought up to their standard of speed and cross-country performance.... It would be wrong to include tanks in infantry divisions: what was needed were armoured divisions which would include all the supporting arms needed to allow the tanks to fight with full effect.*<sup>14</sup>

Though the rise of the National Socialists in 1933 brought dramatic changes to Germany, the leaders realized that armor was consistent with their expansive goals. But the program was not without its problems. In maneuvers tanks encountered maintenance failures, including XVI *Panzer* Corps under Guderian. In the invasion of



U.S. Navy (Dawn C. Montgomery)

**Underwater vehicle  
hunting mines.**

Austria, "no less than 30 percent of his vehicles broke down or ran out of petrol . . . [while others] put the figures even higher, at 70 percent."<sup>15</sup> Nevertheless, despite these operational failures, the Versailles Treaty, and changes in leadership, Panzer divisions were promoted because they were consistent with German strategy.

### Capabilities-Based Planning

According to the Chairman, while the Nation doesn't know who will threaten its interests, a capabilities-based strategy is focused on how a potential enemy might fight. It helps to identify

the assets that the Armed Forces will need to deter and defeat a variety of threats.

The notion of two major regional conflicts (MRCs), specifically another Persian Gulf War and Korean conflict, became the measure by which the military was

judged after Desert Storm in 1991. In the wake of September 11, some might argue that terrorism is the wave of the future, and the Bush administration concluded that the two-MRC scenario has outlived its usefulness. To avoid surprise, the Pentagon believes it is more important to demonstrate a breadth of capabilities than to focus exclusively on depth against one scenario.

As a result, the force planning requirements that drove budget development are no longer based on the two-MRC approach of the 1990s but on a broader capabilities-based model. If a very specific strategic challenge were to arise, as Germany did in both wars, this change might dilute the military's focus. But the United States today is

much closer to Great Britain's earlier experience, with global interests and a range of potential conflicts. Thus this shift away from the two-MRC focus is a sound approach to avoiding Britain's mistake with the ten year rule.

### Effective Innovation

Another risk deserves attention. A nation may successfully pursue innovative ideas but still meet with disaster if enemy advances are more effective. For example, France built the Maginot Line along its border with Germany to protect its industries in Alsace-Lorraine. The defenses were a sophisticated set of bunkers, tunnels, and gun turrets which represented a huge advance over the fortifications of World War I. The French halted the defenses on the Belgian border partly because of financial constraints but also as part of their strategy. By forcing Germany through Belgium, France believed they could guarantee both Belgian and British participation in the war. In addition, it hoped to avoid the devastation of another invasion of its territory.

While plans for the Maginot Line went forward, French tank doctrine stagnated. The basic field manual published in 1929 on armor warfare, *Instruction sur l'Emploi des Chars de Combat*, stated that tanks were "only a means of supplementary action temporarily set at the disposal of the infantry" and that they "considerably reinforce the action of the latter, but they do not replace it."<sup>16</sup> French armored units lacked mechanized support, thus preventing their use in breakthroughs. The 1937 manual rejected the exploitation mission.

France had 3,000 tanks and Germany had 2,400 in 1940. But the Germans structured their military to support *Blitzkrieg*. France was blinded to this revolution in warfare and was decisively defeated because of it. The sobering point is that the Maginot Line did what its planners expected. The Germans were forced to circumvent its defenses. It allowed France to concentrate its army on a narrow front. It ensured both Belgian and British participation in the war. Yet France still lost. It was not enough for Paris to try a new approach to war; it needed to be aware of German efforts and prepared to counter them.

### The New Budget

Since the United States has a high-tech economy, much of the debate on transformation is focused on information technology. The capabilities the military is pursuing are generally designed to take advantage of information that can be moved and analyzed by computers. New technologies this makes possible include unmanned aerial vehicles and precision-guided munitions.

**it is more important to  
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one scenario**

But it is conceivable that military transformation will be driven by different technologies, or perhaps by exploiting vulnerabilities in a force dependent on computers. To avoid creating a digital Maginot Line, it is critical to understand the technology and tactics that an enemy may pursue, such as weapons of mass destruction, ballistic missiles, cyberwarfare, and terrorism.

The DOD budget approaches this problem by directing resources toward a range of threats. Outlays for 2001 to 2003 contain \$528 million (an increase of 130 percent) for additional research on chemical and biological defenses, \$2,173 million (40 percent) for ballistic missile defense, and \$262 million (51 percent) in equipment for U.S. Special Operations Command. Similar growth in spending was made for intelligence, information security, space, and homeland defense. Although it is impossible to eliminate the risk of surprise, the new defense budget provides sound levels of funding across various programs that should greatly reduce vulnerability.

Because the budget request for FY03 initially retained the Crusader and also declined to cut tactical fighter programs or reduce the number of carriers, critics quickly characterized the outcome as business as usual. It appeared that the bureaucracy won and transformation lost. This analysis was wrong. Proposals to scale back on these programs will be viewed as a make-or-break test for military transformation. But that analysis is wrong as well. The administration is taking steps to address obstacles that have prevented other nations in the past from transforming their militaries. That level of thoroughness is not simply good fortune; it is intentional.

A critical fight over military transformation did not occur with the development of the FY03 budget. It will unfold over the next five to ten years as the services acquire the next generation of matériel as well as the doctrine and organization to operationalize them. To ensure that those future decisions actually transform the military, innovative technologies must become sufficiently mature, political and military leadership must foster innovation, and national security strategy must support a new approach to warfighting. The current defense budget certainly takes those steps. This is the path to transformation.

## NOTES

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<sup>3</sup> Heidi and Alvin Toffler, *War and Anti-War* (Boston: Little, Brown and Company, 1993), p. 29.

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<sup>5</sup> Stephen Peter Rosen, *Winning the Next War* (Ithaca, N.Y.: Cornell University Press, 1991), p. 105.

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<sup>10</sup> The Secretary of Defense quoted by Vince Crawley in "New CINCs to Shape U.S. Military Policy for Decade," *Defense News*, February 25–March 3, 2002, p. 68.

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